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| APPLICATION NO.       | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------|-------------|----------------------|---------------------|------------------|
| 10/620,893            | 07/16/2003  | Joseph R. Montano    | 50679-2 CIP         | 8930             |
| 21874                 | 7590        | 11/29/2005           | EXAMINER            |                  |
| EDWARDS & ANGELL, LLP |             |                      | CAMERON, ERMA C     |                  |
| P.O. BOX 55874        |             |                      | ART UNIT            | PAPER NUMBER     |
| BOSTON, MA 02205      |             |                      | 1762                |                  |

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/620,893             | MONTANO ET AL.      |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Erma Cameron           | 1762                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 13 October 2005.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-6,8-15,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) 3-6 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-2, 8-15 and 19-20 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

1. Applicant's arguments filed 10/13/2005 have been fully considered but they are not persuasive.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 8-15 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/24974 taken in view of Linde et al (5114757).

‘974 teaches treating a metal, such as copper in a multilayer printed circuit board (p 10), with an adhesion promotion composition, such as a bath of oxidizer/acid/corrosion inhibitor, called an alternative oxide bath (p11), to micro-roughen the metal (p 9, 11), followed by treatment with an aqueous wetting agent composition (containing agents such as polyethylene glycol (p 10)), which acts as a primer for the next layer, a polymer, such as a pre-preg, in order to improve the adhesion between the metal and the polymer (p 7-9). The bond between metal and polymer may be enhanced with pressure and heat (p 15).

‘974 teaches that the wetting agent that is used as a primer is at 0.5-30% by weight (p 11), which overlaps with applicant’s claimed range.

‘974 teaches that the bond strength is 6.3-7.3 lbs/in<sup>2</sup> (p19), which overlaps with applicant’s claimed ranges.

‘974 fails to teach a silsesquioxane as a primer layer.

‘757 teaches a silsesquioxane layer as an adhesion promoter between a metal and polyimide (see Abstract).

It would have been obvious to one of ordinary skill in the art to have incorporated the silsesquioxane into the ‘974 priming step because of the teaching of ‘757 that silsesquioxane improves the adhesion between metal and the next polymer layer.

*Response to Arguments*

4. The applicant has argued in the 10/13/2005 amendment that '757 teaches curing steps that their claimed invention does not. The open language of claim 1, line 1 permits other steps in the claimed process. It is the examiner's position that '757 teaches silsesquioxane as a primer between metal and a polymer, and that one of ordinary skill in the art would have been motivated to incorporate the silsesquioxane priming of '757 into the '974 priming step because of the teaching of '757 of the strong bond that is formed between the metal and the polymer, and because of the teaching that the layer of silsesquioxane is both moisture resistant and oxidation resistant, which would be important for metal protection ('757: 5:22-38). The silsesquioxane is also reported to have enhanced thermal stability characteristics compared to other adhesion promoters.

*Conclusion*

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erma Cameron whose telephone number is 571-272-1416. The examiner can normally be reached on 8:30-6:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ERMA CAMERON  
PRIMARY EXAMINER

Erma Cameron  
Primary Examiner  
Art Unit 1762

November 23, 2005